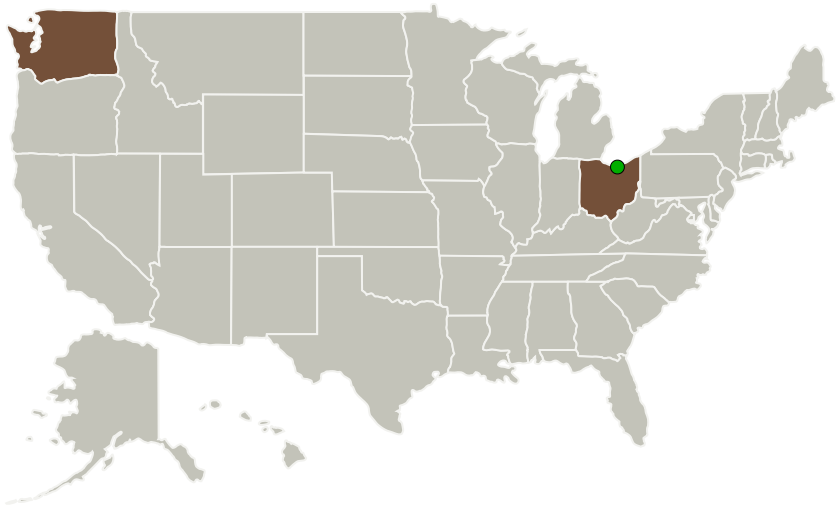
Advanced Green Micropropulsion System, Phase II

Completed Technology Project (2014 - 2017)

Project Introduction

Systima in collaboration with University of Washington is developing a high performance injection system for advanced green monopropellant AF-M315E micropropulsion systems (0.1 – 1.0 N) for small- and micro-satellites and cubesats (100 kg-500 kg and <100 kg). The monopropellant has low-toxicity making it easy to store, integrate into modular designs and launch without added costs associated with handling toxic propellants such as hydrazine. The injector is a critical component that is designed to enhance combustion and optimize microthruster performance. In the Phase I program, Systima and UW completed proof-of-concept tests that demonstrated the injector technical concept and system advantages. In the Phase II program we will develop a prototype injector design, conduct injector performance testing and workhorse microthruster hot-fire tests with AF-M315E. This effort will result in a monopropellant injection system for modular microthruster system designs that meets the needs of current and future small- and micro-satellites for NASA missions, commercial and military customers.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Systima Technologies, Inc.	Lead Organization	Industry	Kirkland, Washington
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
University of Washington, Department. Aeronautics & Astronautics	Supporting Organization	Academia	Seattle, Washington
University of Washington-Seattle Campus(UW)	Supporting Organization	Academia Alaska Native and Native Hawaiian Serving Institutions (ANNH)	Seattle, Washington

Primary U.S. Work Locations	
Ohio	Washington

Project Transitions

September 2014: Project Start

March 2017: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137723)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Systima Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Stephanie Sawhill

Co-Investigator:

Stephanie Sawhill

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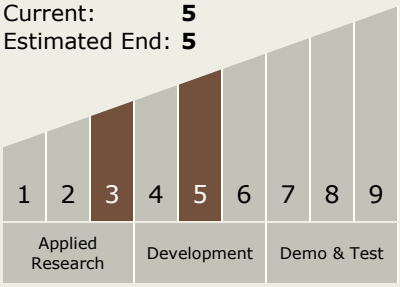
Images

Briefing Chart Image
Advanced Green Micropropulsion System, Phase II
(https://techport.nasa.gov/image/130014)

Final Summary Chart Image
Advanced Green Micropropulsion System, Phase II Project Image
(https://techport.nasa.gov/image/128634)

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.4 Solids

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System